how we eat up here in the flight. Pardon the picture while we move around here and change cameras. The food that we use is all dehydrated; it comes prepackaged in vacuum-sealed bags. You notice that all Bill has to do to keep it in one place is let go of it. Except for the air currents in the spacecraft, it would stay perfectly still. He gets out his handy, dandy scissors and cuts the bag. The food is varied, generally pretty good. If that doesn't sound like a rousing endorsement, it isn't, but nevertheless, it's pretty good food. You can see that Bill is very clever. He does things swiftly. Actually, those food bags are stuc together because they've been vacuum packed in plastic.

04 08 28 24 CMP What do you have today, Bill, for dinner?

04 08 28 32 LMP Well, here we have some cocoa; should be good. I'll be adding about 5 ounces of hot water to that. These are little sugar cookies, some orange juice, corn chowder, chicken and gravy, and a little napkin to wipe your hands when you're done. I'll prepare some orange juice here.

04 08 29 37 CDR Okay. You can see that he's taking his scissors and cutting the plastic end off a little nozzle that he's going to insert the water gun into.

The water gun dispenses a half-ounce burst of water per click. Here we go; Bill has it in now, and the water is going in. I hope that you all had better Christmas dinners today than us, but nevertheless, we thought you might be interested in how we eat.

04 08 30 51 CC Roger. I haven't heard any complaints down here, Frank. We'll bring you up to speed on your food when you get back.

04 08 30 59 CDR Very good.

04 08 31 01 CC Looks like a happy home you've got up there.

04 08 31 04 CDR Ordinarily, we let these drinks settle for 5 or 10 minutes, but Bill's going to drink it right now. Then, to get on with the program, he cuts open another flap, and you'll see a little tube comes out - -

04 08 31 22 CMP This is not a commercial.

04 08 31 36 CDR - - and he drinks his delicious orange drink. Maybe I should say he drinks his orange drink. He's usually not that fast. Bill is really in a hurry today. Well, that's what we eat. Now another very important part of the spacecraft is the navigation station or the optics panel. And we - just a minute; Bill wants to say something.

04 08 32 04 LMP That's good, but not quite as good as good old California orange juice.

| | | |
|---|---|---|
| 04 08 32 09 | CDR | Bill's from Florida. |
| 04 08 32 12 | CDR | Okay. Now if you'll let me have the camera, Jim, I'll show the people where you do most of your work. Okay. Bill, can you explain it? |
| 04 08 32 25 | CMP | If I can clean up some of Bill's food around here, and have it away - Down in this area is called the LEB or the lower equipment bay, and we have our optics positioning equipment right here. We do all our navigation down here by sighting on stars and on horizons of either the moon or the earth. And this is where we find out exactly where we are in space, what direction, and how fast we are traveling. And our computer, as Frank has mentioned, takes information and tells us how to maneuver to get home safely. I work with the scanning telescope and the sextant, and occasionally, if I get too busy, I just sort of float out of sight and go up into the tunnel which is the tunnel to the hatch of the lunar module which we don't have onboard, of course. |
| 04 08 33 35 | CDR | Now that's about all we have for today. I - each and every one of us wish each and every one of you a very Merry Christmas. And, I guess we'll see you tomorrow, and we'll be landing early Friday morning. Merry Christmas from Apollo 8. |

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| 04 08 33 53 | CC | Roger. Merry Christmas from the ground, Apollo 8, and thank you very much for the guided tour. We really enjoyed it. |
| 04 08 34 00 | CDR | Roger. |
| 04 08 35 11 | CC | Apollo 8, Houston. |
| 04 08 35 15 | CDR | Go ahead, Mike. |
| 04 08 35 16 | CC | We're suggesting attitude deadband MAX and rate HIGH. |
| 04 08 35 25 | CDR | You're right. Thank you. |
| 04 08 45 29 | CDR | Houston, Apollo 8. |
| 04 08 45 32 | CC | Go ahead, Frank. |
| 04 08 45 36 | CDR | How soon will they tell us what effect the midcourse had on our trajectory, Mike? |
| 04 08 45 42 | CC | Oh, the longer we track, the smarter we'll get; but stand by one for a pertinent answer. |
| 04 08 46 39 | CC | Apollo 8, Houston. |
| 04 08 46 43 | CDR | Go ahead. |
| 04 08 46 44 | CC | Tentatively, midcourse correction at 122 hours is zero; and in about an hour and a half, we'll have some track data to confirm that. |
| 04 09 46 57 | CDR | Okay. Thank you. |
| 04 09 47 09 | CDR | We're going to have something to eat here, Mike; just taking it easy. |
| 04 09 47 16 | CC | Roger. Understand, Frank. |
| 04 09 47 39 | CDR | Did you get another shotgun for Christmas? |
| 04 09 47 45 | CC | No, I'm missing enough with the one I have. |

Why the space here?

should these by 04 08 46, ? Seems reasonable.

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| 04 09 47 50 | CDR | That's what Edwin told me; I thought maybe you might want to try another one. |
| 04 09 48 00 | CDR | What was it, 40 shots at four birds? |
| 04 09 48 02 | CC | Oh, negative, Frank. I'm 100 percent, one bird per box. |
| 04 09 48 12 | CDR | Then you and I are in the same fix. |
| 04 09 51 18 | CMP | Houston, Apollo 8. |
| 04 09 51 22 | CC | Apollo 8, Houston. Go ahead. |
| 04 09 51 26 | CMP | It appears that we did a grave injustice to the food people. Just after our TV show, Santa Claus brought us a TV dinner each, which was delicious, turkey and gravy, cranberry sauce, grape punch; outstanding. |
| 04 09 51 45 | CC | Roger, Jim. Glad to hear it. Now we're down here eating cold coffee and bologna sandwiches. |

END OF TAPE

Should be 04308 ?

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)



| | | |
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| 04 09 10 10 | CDR | Houston, Apollo 8. |
| 04 09 10 15 | CC | Apollo 8, Houston. |
| 04 09 10 23 | CC | Apollo 8, this is Houston. Over. |
| 04 09 10 28 | CDR | Roger. We've got an awful lot of these stars to mark on now, Mike, and they were having some concern about the PTC. Will you let us know if we stay in one position too long, or if we have to knock off and do some PTC? |
| 04 09 10 42 | CC | Will do, Frank. |
| 04 09 10 45 | CDR | Thank you. |
| 04 09 12 46 | CC | Apollo 8, Houston. We are monitoring your temperatures. The quads all look good. We will continue to do so, and we expect no difficulty with them during the P23 work. |
| 04 09 12 59 | CDR | Thank you. |
| 04 09 13 12 | CDR | Our highest tank temperature now is C. |
| 04 09 13 17 | CC | Understand; C is the hot one. |
| 04 09 48 39 | CC | Apollo 8, Houston. Over. |
| 04 09 49 12 | CC | Apollo 8, this is Houston. Over. |
| 04 09 49 17 | LMP | Go ahead, Houston. |
| 04 09 49 20 | CC | Roger, Bill. We would like to talk about your high-gain antenna sometime when you get a minute. |
| 04 09 49 27 | LMP | Okay. Just a second, Mike. |
| 04 09 50 47 | LMP | About 5 minutes, Mike, we'll be done here. |
| 04 09 56 22 | LMP | Houston, Apollo 8. About the high-gain antenna. |

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| 04 09 58 23 | LMP | I'm still starting. |
| 04 09 58 30 | LMP | Okay. Make sure tracking in AUTO and then what? |
| 04 09 58 34 | CC | Make sure tracking in AUTO, and then switch to AUTO REACQ mode. Over. |
| 04 09 58 46 | LMP | Okay. Will do. |
| 04 09 58 48 | CC | Okay. Step 5, position high-gain antenna pitch and yaw control to predicted earth's rise angles, and those angles are yaw 50 degrees, pitch minus 40 degrees. Over. |
| 04 09 59 18 | LMP | Okay. |
| 04 09 59 19 | CC | Okay. Two more steps. Step 6, remain on high-gain antenna in this mode for two REV's. Do not switch to OMNI anytime during these two REV's, and maintain mode configuration of voice and data. We expect loss of track should be no more than 15 minutes per REV. Over. |
| 04 09 59 51 | LMP | Roger. |
| 04 09 59 53 | CC | And the final step, 7, if any problem arises, go back to your initial gimbal angles of 10 degrees pitch, 45 degrees yaw, and 150 degrees roll; reacquire and go to AUTO mode. Over. |
| 04 10 00 18 | LMP | Yes, I guess there ought to be a step 4A which says start roll again, right? |
| 04 10 00 29 | CC | That's affirmative. Excuse me there, that's affirmative. |
| 04 10 00 38 | LMP | Okay. If - let's see, if we - I don't understand your last comment. If we get into a |

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| 04 09 56 26 | CC | Okay, Bill. We think it would be an extremely worthwhile thing to find out how it operates in the AUTO REACQ mode, and we propose running a test on it in that mode from 109 to 111 hours GET. Over. |
| 04 09 56 46 | LMP | Okay. We'll do that. |
| 04 09 56 48 | CC | Okay. I have about a - - |
| 04 09 56 50 | LMP | We'll try it on the way out. |
| 04 09 56 58 | CC | We have a detailed procedure which we can read up to you anytime you're ready. |
| 04 09 57 07 | LMP | Go ahead. |
| 04 09 57 10 | CC | Okay. We suggest the start time 109 hours GET, stop time 111 hours, and you'll be in a PTC. We're requesting a left roll rate, which we notice that you've been preferring, a left roll rate of 1 revolution per hour, and this is in your present PTC attitude (i.e., pitch 10 degrees, 010 degrees, and yaw 45 degrees). The procedure is this: step 1, stop at roll angle 150 degrees; acquire - this is step 2 - acquire in MANUAL mode; three, switch to AUTO NARROW BEAM; four, make sure tracking in AUTO mode then switch to AUTO REACQ mode; five, position the high-gain antenna - - |
| 04 09 58 17 | CMP | Wait a minute, Houston. |
| 04 09 58 19 | CMP | Whoa, whoa, whoa. |
| 04 09 58 21 | CC | Okay. Whoa, whoa. Standing by. |

problem, you want us to go back to 150 degrees roll?

04 10 00 50 CC Well, all we want you to do is go ahead and reacquire in the AUTO mode, Bill. And it looks like that would be one way of doing it. But all we're saying is, you know, if you want to talk to us about something, or you have any other problems, or you don't like the way it looks, anything at all, just go ahead and reacquire in the AUTO mode.

04 10 01 10 LMP Yes, why don't we just say if we do have problems, it doesn't pick it up when it's supposed to, give it a good try, and then call you up on the OMNI'sor position ourselves and we'll talk about it and try for another two REV's.

04 10 01 21 CC That's just fine, Bill.

04 10 01 29 LMP Okay. It's worked. We tried it once or twice on the way out, but the one modification is once it did break lock, and go to its MANUAL position, but I switched to the OMNI's in between. That sounds fine.

04 10 01 45 CC Bill, could you run through that again? We're not reading you too loud, and would you say again what you tried on the way out, please.

04 10 01 55 LMP On the way out, they gave us some REACQ angles which we used, and once it broke lock and repositioned itself, why, it went over to the OMNI's

and waited till we got to near breaking lock again and switched back and snapped right in there.

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| 04 10 02 20 | CC | Roger. Thank you. We copy. |
| 04 10 02 28 | LMP | We have a few more stars to get, and then we'll give it a try. |
| 04 10 02 33 | CC | Roger. |
| 04 10 23 15 | CC | Apollo 8, Houston. Over. |
| 04 10 23 20 | LMP | Go ahead, Houston. |
| 04 10 23 22 | CC | Roger, Bill. We got a bunch of tapes of some of your favorite music down here. You be interested in hearing a little background on the S-band? |
| 04 10 23 32 | LMP | Go ahead. |
| 04 10 23 31 | CC | Okay. |
| 04 10 27 22 | LMP | Houston, Apollo 8. |
| 04 10 27 24 | CC | Apollo 8, Houston. Go ahead. |
| 04 10 27 28 | CMP | Roger. For some reason, we suddenly got a PROGRAM 01 and no attitude light on our computer. |
| 04 10 27 35 | CC | We confirm that. |
| 04 10 27 51 | CC | Stand by one, Jim. We're working on a procedure for getting you cranked back up again. |
| 04 10 27 57 | CMP | Okay. |

END OF TAPE

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)



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| 04 10 29 58 | CC | Apollo 8, Houston. |
| 04 10 30 02 | CMP | Go ahead. |
| 04 10 30 04 | CC | Okay. Jim, while we're working on this procedure, we'd like to know did you select 01, did you get a VERB 37 ENTER, 01 ENTER? |
| 04 10 30 15 | CMP | Let's see, I'm not too sure, Mike. I might have done that, yes. |
| 04 10 30 20 | CC | Okay. |
| 04 10 30 21 | CMP | We have star 01 coming up, now that might have been the reason. |
| 04 10 30 25 | CC | Okay. We understand. Why don't you just hold what you've got on your DSKY, and we'll be with you shortly. |
| 04 10 30 29 | CMP | Okay. |
| 04 10 32 29 | CC | Apollo 8, Houston. |
| 04 10 32 33 | CMP | Go ahead. |
| 04 10 32 34 | CC | Roger. Could you or Bill give us a better OMNI antenna, please? |
| 04 10 32 42 | CMP | Stand by. |
| 04 10 37 53 | CC | Apollo 8, Houston. Over. |
| 04 10 37 56 | CDR | Go ahead, Houston. Apollo 8. |
| 04 10 37 58 | CC | Okay. Frank, our procedure is to select P00, and from P00 go to P51, and get a platform alignment. After you've done that, we will send you up a P27, a REFSMMAT, and then you can do P52 REFSMMAT options. Then you'll be back in business. Over. |

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| 04 10 38 21 | CDR | Okay, Mike. Thank you. |
| 04 10 38 22 | CMP | Roger. |
| 04 10 47 55 | CDR | Houston, this is Apollo 8. |
| 04 10 48 12 | CDR | Houston, Apollo 8. |
| 04 10 48 15 | CC | Apollo 8, this is Houston. Go ahead. |
| 04 10 48 24 | CC | Apollo 8, this is Houston. Say again. Over. |
| 04 10 48 29 | CDR | Okay. We've completed a P51 now. You want us to try a P52, or do you want us to wait till we can put a REFSMMAT in? |
| 04 10 48 39 | CC | Stand by one, will you, please, Frank? |
| 04 10 48 43 | CDR | Roger. |
| 04 10 48 50 | CC | We're putting together a P27 load for you now, Frank; that's the reason for the delay. We just want to make sure we don't overlook anything before we send it up to you. |
| 04 10 49 02 | CDR | Okay. We'll just sit tight then. We've got a good P51. We'll just wait till you put in a REFSMMAT, and then, of course, we'll fine align over to that, right? |
| 04 10 49 14 | CC | That's right, that's exactly right. Just stand by. |
| 04 10 49 45 | CDR | Mike, this is Frank again. |
| 04 10 49 47 | CC | Go ahead. |
| 04 10 49 50 | CDR | I suggest that we go ahead while you're doing that, do a P52 here, and let it do an automatic and just tweak this up. Jim had to use Rigel |

and Sirius, and they're pretty close together. And although we got a zero difference for the star angle, that might not be a bad idea just to try a 52 here.

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| 04 10 50 08 | CC | We'd rather not do that, Frank. Stand by one. |
| 04 10 50 14 | CDR | Alright. We won't do a thing. |
| 04 10 50 47 | CC | Frank, we feel that procedure that you're talking about is really not required, and it's sort of wasting your time. You'd still have to - upon completion of that, we'd have to send you a new REFSMMAT, and you'd have to go ahead and do P52 to that REFSMMAT in addition. Over. |
| 04 10 51 07 | CDR | We understand that. Go ahead. We'll wait for your REFSMMAT. |
| 04 10 51 09 | CC | Okay. Thank you. |
| 04 10 52 11 | CC | Apollo 8, Houston. If you'd go POO and ACCEPT, we have our P27 ready. We'll send you up a REFSMMAT. Over. |
| 04 10 52 20 | CDR | Roger. POO and ACCEPT. |
| 04 10 52 23 | CC | Roger. |
| 04 10 53 15 | CC | Apollo 8, Houston. Frank, we'd like to make sure you understand that when you do your P52, you want to select option 1, the preferred option, because those are the registers we're blinking now with this P27. |
| 04 10 53 31 | CDR | Roger. Option 1; thank you. |

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| 04 10 55 08 | CC | Apollo 8, Houston. We got a good load in; it's your computer. Go to BLOCK. |
| 04 10 55 16 | CMP | Okay. |
| 04 10 55 17 | CDR | Roger. Stand by. |
| 04 10 55 19 | CC | And you can go ahead with your P52 at your convenience. |
| 04 10 55 24 | CDR | We're going ahead right now. |
| 04 10 58 47 | CC | Apollo 8, Houston. Over. |
| 04 10 58 49 | CDR | Go ahead, Houston. Apollo 8. |
| 04 10 58 50 | CC | Roger. When Jim gets to the end of P52, he's got a flashing VERB 37. We'd like him to not proceed, to hold at that point; we'd like to read some bits and pieces out of the computer at that time. Over. |
| 04 10 59 10 | CDR | Roger. |
| 04 10 59 20 | CC | Apollo 8, if Anders has got time to give us a countdown, could we get the BIOMED switch from center to left? |
| 04 10 59 33 | LMP | Two, one - |
| 04 10 59 34 | LMP | MARK. |
| 04 10 59 38 | CC | Did you take that 1.7-second time delay into account? |
| 04 10 59 44 | LMP | Sorry about that. |
| 04 11 00 38 | CMP | Okay. Houston, you have it. |
| 04 11 00 49 | CC | Thank you, Jim. And I'll give you ar estimate here on how long we want to hold at this point; it won't be too much longer. |

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| 04 11 00 58 | CMP | Roger. It was my goof; I must have put in 3701 instead of 3723 and 501. |
| 04 11 01 11 | CC | Roger. |
| 04 11 03 04 | CC | Apollo 8, Houston. We have got a flight plan suggestion for you. |
| 04 11 03 11 | CDR | Go ahead. |
| 04 11 03 13 | CC | Go ahead and delete the remainder of the P23's that you're working on now, go back to PTC attitude, and then pick up where it says 108 hours in the flight plan to pick up again there with your P23, or if you prefer to slip that time a couple of hours, if you want to get some rest in between. |
| 04 11 03 37 | CDR | I think that's a good idea; we'll do that. |
| 04 11 03 40 | CC | Okay. |
| 04 11 03 59 | CMP | Mike, what does this do to our state vector? |
| 04 11 04 02 | CC | Not a thing. We've looked at your state vector, and it's good. |
| 04 11 04 08 | CMP | So we didn't lose all the NAV we had just accomplished, right? |
| 04 11 04 16 | CC | Stand by one on that, Jim. I don't know; I'm checking. |
| 04 11 05 44 | CC | Apollo 8, Houston. |
| 04 11 05 49 | CMP | Go ahead. |
| 04 11 05 51 | CC | Roger. I say again, your state vector is just fine; it's still ticky-poo, and the reason we're |

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| | | holding here is that we're checking to see if any P23 information was lost. That's reason one, and the second reason is that your W-matrix shares some computer memory cells with P01, and we are getting a clarification on the status of your W-matrix before we proceed. Over. |
| 04 11 06 22 | CMP | Roger, Michael. |
| 04 11 06 53 | CDR | We'll go ahead and start heading over to the PTC attitude. |
| 04 11 06 57 | CC | Very good. |
| 04 11 07 57 | CDR | Do you need that high gain any more, Mike? |
| 04 11 08 07 | CC | Negative. We don't need it any more. |
| 04 11 18 51 | CC | Apollo 8, Houston. |
| 04 11 18 54 | CDR | Go ahead. |
| 04 11 18 56 | CC | Roger, Frank. We're coming up on time for an oxygen purge on all three fuel cells. It might be a good time to do it while we are waiting here. |
| 04 11 19 04 | CDR | Fine. |
| 04 11 19 31 | CDR | Alright. Mike, we are going to purge the three fuel cells, oxygen only. |
| 04 11 19 35 | CC | That's correct. Thank you. |
| 04 11 23 44 | CC | Apollo 8, Houston. That's enough on fuel cell number 1; if you'd start on two please. |
| 04 11 23 51 | CDR | Roger. |

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| 04 11 32 22 | CC | Apollo 8, Houston. We're in low bit rate now. Last time we saw you, you were still purging. Over. |
| 04 11 32 31 | CMP | Roger. ... |
| 04 11 32 35 | CC | You're unreadable, but request that you end your purge. |
| 04 11 32 42 | CMP | Roger. We ended our purge. |
| 04 11 32 45 | CC | Thank you. |
| 04 11 38 37 | CC | Apollo 8, Houston. Over. |
| 04 11 38 42 | CMP | Go ahead, Houston. |
| 04 11 38 44 | CC | Roger, Jim. I've got a short procedure I would like to read up to you on your DSKY, and I'd like to explain what it is. Your W-matrix shared some memory locations with P01; therefore, the W-matrix that you have right now is not a good one, and we would not want you to continue your P23 sightings with that matrix. So the procedure I'm going to give you is going to cause the matrix to reinitialize itself prior to your next P23, when you go into P23. And this will put you back with the value of the W-matrix which you loaded after TEI, you remember, that 3303 thing. And if this has any further effects on the flight plan, we're in the process of sorting that out, and if need be, we'll send you up a revised sighting schedule later, both with the COMM and loss of COMM case. Over. |

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| 04 11 39 53 | CMP | Okay. Stand by, and I'll get something to copy with. |
| 04 11 39 57 | CC | Okay. |
| 04 11 40 09 | CMP | Okay. Go ahead. |
| 04 11 40 11 | CC | Okay. Insert without releasing the flashing VERB 37 the following: VERB 25 NOUN 07 ENTER, 77 ENTER, 40 ENTER, ENTER, VERB 37 ENTER, 00 ENTER. Over. |
| 04 11 40 49 | CMP | Understand. We insert VERB 37 without releasing, is that correct? |
| 04 11 40 56 | CC | Roger. You should have flashing 37 on your DSKY now, and without releasing that flashing 37, go ahead with the VERB 25, et cetera. |
| 04 11 41 08 | CMP | Roger. Okay. I see what you mean. Okay. We'll insert VERB 25, NOUN 07 ENTER, 77 ENTER, 40 ENTER, ENTER, reinsert VERB 37 ENTER, 00 ENTER. |
| 04 11 41 24 | CC | That's all correct. Say, if you've got any questions about that, we would be happy to answer them. |
| 04 11 41 35 | CMP | Roger. Are we cleared to do that now? |
| 04 11 41 37 | CC | That's affirmative, Jim. |
| 04 11 41 39 | CMP | Roger. |
| 04 11 42 29 | CDR | Hey, Mike, this is Frank. |
| 04 11 42 32 | CC | Go ahead, Frank. |
| 04 11 42 36 | CDR | Is there any danger that this might have screwed up any other part of memory that would be involved with entry or anything like that? |

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| 04 11 42 53 | CC | Frank, all indications are that there is absolutely no problem with anything in the computer memory other than the W-matrix. However, we are continuing to look at it, and if there is any doubt in our mind, we will ask you to dump the memory locations for us later. Over. |
| 04 11 43 15 | CDR | Okay. Fine. |
| 04 11 56 41 | CC | Apollo 8, Houston. |
| 04 11 56 45 | CMP | Go ahead, Houston. |
| 04 11 56 47 | CC | Roger, Jim. We thought you might be interested in knowing, based on 2-1/2 hours worth of track after your last midcourse, and looking ahead, we're predicting the midcourse correction at 122 hours will be less than 1 foot per second. And keep it on going to entry interface minus 2 hours, we're predicting 2 foot per second midcourse at that time. Now those numbers will be refined; we'll get about another 8 hours of track on you before we amend them. Over. |
| 04 11 57 21 | CMP | Sounds like we're on pretty good trajectory. |
| 04 11 57 25 | CC | Can't hardly beat it. |
| 04 11 57 33 | CMP | After we do these next P23's, I'll see what our P37 gives us. What's that midcourse, 122 hours that has practically zero? |
| 04 11 57 44 | CC | Yes. It's looking to be less than 1 foot per second, about four-tenths of a foot per second |

right now. And then the one before entry, at 2 hours before entry interface, is looking to be about 2 feet per second.

04 11 58 00 CMP Roger. Well, okay. I'll run a P37, and we can just compare the difference.

END OF TAPE

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)



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| 04 12 07 59 | LMP | Houston, Apollo 8. Over. |
| 04 12 08 45 | LMP | Houston, Apollo 8. Over. |
| 04 12 08 50 | CC | Apollo 8, Houston. Over. |
| 04 12 08 53 | LMP | Roger. Got the JOD back on watch again. We want to make sure we don't overdo the star sightings at the expense of thermal control, so you might keep an eye on us and give us a NO-GO if we start getting too hot on one side. |
| 04 12 09 09 | CC | Roger. Will do, Bill. Has Jim gone to bed? |
| 04 12 09 18 | CMP | No, I'm right here. We're going to start doing cislunar NAV right now, and Bill's up in the left-hand seat. |
| 04 12 09 28 | CC | Roger. Understand; you're going to do some P23's now. We thought you were going to take a rest and do them later. |
| 04 12 09 38 | CMP | No, Frank is asleep now. We'll get these out of the way. So I'm coming over to do a trunnion alignment at this time, and then we'll go into the P23. |
| 04 12 09 56 | CC | Okay, Jim. There's one thing before you get started on the P23. What we told you before, we still think is absolutely correct. The only thing in the computer memory that is changed by that P02 is the W-matrix. However, as an additional precaution, we'd like to dump the computer memory and go through it and check it bit |

by bit and make sure everything is exactly copacetic. Over.

04 12 10 31 CMP Okay. Do you want to do that now?

04 12 10 34 CC Affirmative. We're getting Goldstone configured for it; it'll be just a minute. And while we're doing that, I can read you this procedure if you're ready to copy.

04 12 10 43 CMP Okay. Stand by one, and I'll be ready to copy pretty soon.

04 12 10 47 CC Thank you.

04 12 11 01 CMP Go ahead.

04 12 11 03 CC Okay. We'd like a VERB 01 NOUN 01 ENTER, 333 ENTER, and then we'd like for you tc read us register 1. Register 1 we expect will be a 10 000, and if register 1 is equal to that, then what that means is that the computer will dump its erasable memory twice. That's 10 000 numbers, twice number for the erasable memory dump. If it's not reading 10 000, then we'll ask you to make it read 10 000 by going VERB 21 NOUN 01 ENTER, 333 ENTER, 10 000 ENTER. After you've done that, the dump VERB is VERB 74 ENTER, and that will automatically dump the total erasable memory twice, and return you to the proper configuration.

04 12 12 13 CMP Okay. The procedure will be VERB 01 NOUN 01 ENTER, 333 ENTER, and read out register 1. Then

10 000 - the memory - the computer will then dump the memory twice as properly configured. If not, we have to load in 10 000, and we do that by going VERB 21 NOUN 01 ENTER, 333 ENTER, 10 000 ENTER, and VERB 74 ENTER. Now if register 1 does read 10 000, then we'll still have to do the VERB 74 ENTER, is that correct?

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| 04 12 12 49 | CC | That's affirmative. That VERB 74 ENTER is what starts the dump. Then we just prior to that want to make sure we got 10 000; we made sure. And just hang loose one on Goldstone down here; we're getting it configured. |
| 04 12 13 10 | CMP | Roger. You need the high gain, Mike? |
| 04 12 13 13 | CC | Negative. We won't need the high gain. |
| 04 12 15 21 | CC | Apollo 8, Houston. Goldstone is all ready, and you can go ahead with that procedure, Jim. |
| 04 12 15 28 | CMP | Roger. |
| 04 12 15 55 | CMP | Okay. Register 1 reads 10 000. |
| 04 12 15 58 | CC | Okay. Thank you. |
| 04 12 16 07 | CMP | And do you want VERB 74 now? |
| 04 12 16 09 | CC | That's fine. |
| 04 12 17 59 | CC | Apollo 8, Houston. |
| 04 12 18 03 | CMP | Go ahead. |
| 04 12 18 04 | CC | Roger. Have you done the VERB 74 ENTER yet? |
| 04 12 18 07 | CMP | No, I'm waiting for your command. |
| 04 12 18 10 | CC | Okay. I'm sorry; you must have missed it. You can go ahead right now, Jim; we're all set. |

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| 04 12 18 17 | CMP | Roger. VERB 74. |
| 04 12 18 23 | CMP | On its way down. |
| 04 12 18 25 | CC | Thank you. |
| 04 12 20 18 | CC | Apollo 8, Houston. Jim, the dump is complete. You can go ahead and do whatever you like with your computer now. |
| 04 12 20 26 | CMP | Roger. |
| 04 12 20 34 | LMP | We're going to be restricted to P23 for a while. |
| 04 12 20 38 | CC | Just don't let Anders touch the computer. |
| 04 12 20 45 | LMP | I haven't yet, and 2 don't plan to. |
| 04 12 20 50 | CC | Roger. We concur with that decision. |
| 04 12 22 17 | CC | Oh, we've just been honored by the presence of Mr. Neil Armstrong who is now standing by the CAP COMM console, alert and eager. |
| 04 12 22 28 | CMP | Roger. Ask him how the stock market is doing. |
| 04 12 22 31 | CC | Tears are rolling down his face. |
| 04 12 26 25 | CC | Apollo 8, Houston.. |
| 04 12 26 29 | LMP | Go ahead. |
| 04 12 26 31 | CC | With the computer, we sort of got behind in our promise of music. Do you still want it? |
| 04 12 26 38 | LMP | Go ahead. |
| 04 12 26 40 | CC | Okay. |
| 04 12 26 44 | LMP | Just so Neil doesn't accompany it. |
| 04 12 27 00 | CC | ... choir. |
| 04 12 27 09 | CC | Neil says you're in luck; he has a cold today. |
| 04 12 29 18 | | (Music of "Joy to the World" and a choir singing another song) |

This omitted from p26 comment 33/3

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| 04 12 32 09 | LMP | Must be the wrong speed. |
| 04 12 33 01 | LMP | Houston, Apollo 8. |
| 04 12 33 21 | CC | Apollo 8, Houston. Over. |
| 04 12 33 25 | LMP | Roger, Mike. That's real nice, but if you don't mind, you'd better hold it off until we get this tracking test done. ... |
| 04 12 33 45 | CC | Roger, Bill. We concur. |
| 04 12 33 54 | LMP | Sounds like it is being run at the wrong speed. |
| 04 12 33 58 | CC | It doesn't sound very good to us either. |
| 04 12 34 02 | LMP | Coming through nicely, though, Mike. You're coming through nicely, Mike; maybe you could just sing a little bit. |
| 04 12 34 10 | CC | Yes, I'll get my harmonica. |
| 04 12 56 36 | LMP | Houston, Apollo 8. |
| 04 12 56 39 | CC | Apollo 8, Houston. Over. |
| 04 12 56 42 | LMP | Roger, Mike. How are our temperatures looking across the service module? Could it be GO here for a shoot in another couple sets on this next start? |
| 04 12 56 53 | CC | Yes. I'm monitoring them, and they look real good to me, Bill. Just a second and I will check with the experts. Yes, you are just fine, Bill, on your quad temps. |
| 04 12 57 08 | LMP | And SPS is okay? |
| 04 12 57 13 | CC | Affirmative. SPS is looking good also. |
| 04 12 57 19 | LMP | Okay. |